

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IL2004/001168

International filing date (day/month/year)
26.12.2004

Priority date (day/month/year)
15.01.2004

International Patent Classification (IPC) or both national classification and IPC
G06T17/50, G06T5/00

Applicant
ALGOTEC SYSTEMS LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IL2004/001168

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/L2004/001168

Box No. V Reasoned statement under Rule 43*bis*.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-33
	No: Claims	
Inventive step (IS)	Yes: Claims	1-33
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-33
	No: Claims	

2. Citations and explanations

see separate sheet

1. Reference is made to the following documents:

D1: US 2002/100009 A1 (Xing et al.) 25 July 2002

D2: Sethian: "Evolution, implementation, and application of level set and fast marching methods for advancing fronts" Journal of Computational Physics Academic Press USA, vol. 169, no. 2, 20 May 2001, pages 503-555

D3: Deschamps et al.: "Fast extraction of minimal paths in 3D images and applications to virtual endoscopy" Medical Image Analysis, Oxford University Press, Oxford, GB, vol. 5, 2001, pages 281-299, cited in the application

2. **Item V: Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- 2.1 The present application meets the requirements of Articles 33(2) and 33(3) PCT because the subject matter of claim 1 appears to be novel and inventive, the reasons being as follows:

As to claim 1:

D1 discloses:

- A method of finding a path from a start point to a target point, in multi-dimensional space (*see abstract, lines 1-4 and page 1, paragraph [0012]*), comprising:
- (a) determining a plurality of points in a physical space, including a start point and an target point (*see page 1, paragraph [0012] and page 3, paragraph [0049]*);
- (b) computing, using a cost function, for said points an accumulated path cost from the start point to a point; representing a minimal cost path from the start point to the point with respect to an optimization criteria (*see page 1, paragraph [0014] and page 3, paragraphs [0056]-[0057]*);
- © computing for at least some of said points an estimated-cost-to-target from a point to the target point (*see page 3, paragraphs [0056]-[0057] supported by page 5, paragraphs [0068]-[0073] and figures 22 and 23*); and
- wherein the determination is based on said accumulated path costs, and is substantially minimal with respect to the optimization criteria (*see page 3, paragraph [0057]*).

D1 however fails to disclose:

- (d) after computing said costs, determining at least one of a minimal path or a minimal path cost of a path from the start point to the target point in the physical space.

The system of D1 determines the minimal path in a tile graph (*see page 3, paragraphs [0053]-[0057]*) and not in the physical space.

An inventive step can be acknowledged.

- 2.2 The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- 2.3 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 2.4 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor are these documents identified therein.